

TITLE: Off-Station Winter Wheat Variety Investigations.

YEAR: 1991

LOCATION: Central Agricultural Research Center, Moccasin

PERSONNEL:

Project Leader: David M. Wichman

Cooperators: Eugene Hockett, MSU, and Landowners

Off-station winter wheat trials were grown at four locations in 1991: Highwood, Denton, Moore, and Geraldine. Multiple-year yield summaries are included for each location. A very dry fall of 1990 hindered germination and fall establishment of some winter wheat in Central Montana. Cool weather impaired mid-spring growth. Even with these apparent setbacks the winter wheat yields were average or above at all test locations. Yields of winter hardy varieties, Winalta, Norstar, and others generally were 10-20 bu/a less than yields of varieties with high yield potentials. Test weights were above average at all locations. No significant disease or insect problems were observed at any of the locations.

A single variety of winter barley, W88-BZ, was planted at all four locations. The winter barley yield levels were good to excellent at Highwood, Denton and Moore. The winter barley did not survive the winter at Geraldine.

TABLE 1991 Winter Wheat Variety Performance at Highwood  
Exp.#3804 Central Agricultural Research Center, Moccasin, MT.

ID#	Variety	Yield bu/a	TestWt lbs/bu	Height inches
CI 17860	NEELEY	74.13	63.73	41
IF 179	BLIZZARD	68.07	63.57	42
CI 17879	ROCKY	67.87	64.90	41
CI 17441	VONA	67.77	63.67	34
CI 15075	CENTURK	66.37	64.50	41
CI 17952	HAWK	65.87	64.07	34
PI517194	TIBER	65.80	62.47	45
RH78W296	BIGHORN *	65.60	63.17	31
ND 8002	SEWARD	63.57	63.47	43
MT 8039	JUDITH	63.40	63.00	39
MT 7811	FRD/WNK//MT 6928/TR	62.97	61.83	38
CI 8885	CHEYENNE	61.37	64.07	46
PI491532	CREE	61.03	63.37	45
CI 13670	WINALTA	58.87	64.03	48
CI 17844	REDWIN	58.23	62.57	46
CI 13190	WARRIOR	57.97	62.73	41
CI 17902	WINRIDGE	57.47	62.37	43
PI491533	NORWIN	57.33	63.67	30
PI478771	AGASSIZ	56.53	63.77	49
CI 17735	NORSTAR	55.40	62.63	51
CI 17439	ROUGH RIDER	52.83	63.17	49
EXPERIMENTAL MEANS		62.14	63.38	
F TEST FOR VAR. df 38		5.58	5.28	
C.V. 1: (S/MEAN)*100		6.33	.92	
C.V. 2: (S OF MEAN/MEAN)*100		3.65	.53	
LSD (0.05)		6.50	.97	

\* Bighorn planted on end (not randomized).

Planted: 9-19-1991 Soil temp. 66 F  
No-Till at 60 degree angle to spring wheat furrow  
into 40 bu/a Wampum spring wheat stubble.  
Harvested: 8-7-1991  
Fertilizer: 50 lbs 18-46-0 with seed. Post plant 100 units of N as  
Ammonium Nitrate.

Soil Test:

Growing Season Precip.: 10.6 inches.

Cooperator: D.Wichman, J.Vavrovsky, E.Hockett

Producer: Ron Long

Comments: W88-BZ Winter Barley planted on end. See Winter Barley  
summary for results. Soil and stubble were very dry at  
seeding time. This allowed us to seed without any  
difficulty with straw bridging on shanks. The wheat did  
not sprout until sometime in the winter. 3/8 pt. L.V.E.  
2.4-D + 1/20 oz. Glean applied for weed control.

TABLE 1991 Winter Wheat Variety Performance at Denton.  
Exp.#3806 Central Agricultural Research Center, Moccasin MT.

ID#	Variety	Yield bu/a	Test Wt lbs/bu	Plt.Ht. inches
CI 17441	VONA	65.47	63.27	31
CI 17860	NEELEY	63.53	62.13	36
CI 17952	HAWK	62.27	62.70	30
MT 8039	JUDITH	61.03	61.53	32
RH78W296	Bighorn *	60.11	62.49	29
CI 17879	ROCKY	60.00	62.10	39
CI 17902	WINRIDGE	59.90	62.40	41
CI 15075	CENTURK	58.90	62.23	37
CI 13190	WARRIOR	55.90	61.50	41
PI517194	TIBER	54.73	61.60	35
MT 7811	FRD/WNK//MT 6928/TR	53.77	60.93	36
PI491533	NORWIN	52.47	62.50	27
ID 279	BLIZZARD	50.77	62.23	37
CI 8885	CHEYENNE	50.20	60.87	42
CI 17844	REDWIN	49.77	61.67	37
ND 8002	SEWARD	48.87	59.47	42
PI491532	CREE	48.77	61.77	40
PI478771	AGASSIZ	46.40	61.43	43
CI 13670	WINALTA	42.73	60.90	40
CI 17735	NORSTAR	39.27	59.80	45
CI 17439	ROUGH RIDER	38.73	60.40	39
EXPERIMENTAL MEANS		53.17	61.57	1 rep
F TEST FOR VAR.		24.18	26.70	
C.V. 1: (S/MEAN)*100		5.17	.52	
C.V. 2: (S OF MEAN/MEAN)*100		2.99	.30	
LSD (0.05)		4.55	.53	

\* Bighorn was planted on one end (not randomized).

Planted: 9-18-1990. 2"soil temp 64 F,  
Harvested: 8-2-91  
Fertilizer: 50lbs 18-46-0 W/seed. 50 units N as anhydrous  
Soil Test:  
Growing Season Precip. April 1 - August 1:  
Cooperator: D.Wichman, J.Vavrovsky, E.Hockett  
Producer: Richard Barber  
Comments:

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TABLE 1991 Winter Wheat Variety Performance at Moore.  
Exp.#3807 Central Agricultural Research Center, Moccasin, MT.

VARIETY	Yield bu/a	TestWt lbs/bu	Height inches
CI 17441 VONA	68.20	64.67	32
CI 17860 NEELEY	63.70	64.33	35
CI 17952 HAWK	62.00	63.90	36
CI 15075 CENTURK	57.87	64.00	37
RH78W296 BIGHORN *	57.56	63.51	31
CI 17879 ROCKY	57.07	62.93	37
CI 17902 WINRIDGE	56.80	62.57	39
PI517194 TIBER	56.13	63.77	38
CI 13190 WARRIOR	55.60	63.77	39
MT 8039 JUDITH	55.57	62.73	36
MT 7811 FRD/WNK//MT 6928/TR	54.63	62.50	36
PI491533 NORWIN	54.47	64.57	25
CI 8885 CHEYENNE	53.83	63.53	39
PI491532 CREE	51.40	63.63	38
ID 279 BLIZZARD	51.10	63.53	41
CI 17844 REDWIN	49.73	63.40	36
ND 8002 SEWARD	49.57	62.40	39
CI 17735 NORSTAR	49.30	62.73	42
PI478771 AGASSIZ	48.60	63.50	43
CI 17439 ROUGHRIDER	46.37	63.30	39
CI 13670 WINALTA	43.67	63.27	38
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EXPERIMENTAL MEANS	54.28	63.45	
C.V. 1: (S/MEAN)*100	6.17	1.15	
C.V. 2: (S OF MEAN/MEAN)*100	3.56	.67	
LSD (0.05)	5.54	1.21	

\* Bighorn was planted on one end (not randomized).

Planted: 9-18-1990 Soil temp. 63 F.

Harvested: 8-13-1991

Fertilizer: 50 lbs 18-46-0 with seed. 57.5 lbs. N Urea.

Soil Test:

Growing Season Precip. April 1 - August 1: 10.5 inches

Cooperator: D.Wichman, J.Vavrovsky, E.Hockett

Producer: Gary Heilig

Comments: 2/3 pt. LV 6 + 1 oz. Tordon applied for broadleaf  
weed control.

TABLE 1991 Winter Wheat Variety Performance at Geraldine  
Exp.#3805 Central Agricultural Research Center, Moccasin, MT.

ID#	Variety	Yield bu/a	Test Wt lbs/bu	Height inches
CI 17860	NEELEY	73.60	62.80	39
MT 8039	JUDITH	73.35	62.35	42
RH78W296	BIGHORN *	70.10	63.3	32
CI 17441	VONA	68.45	64.45	36
PI517194	TIBER	68.30	63.15	41
CI 17902	WINRIDGE	66.75	61.65	44
CI 17879	ROCKY	66.55	64.05	41
PI491533	NORWIN	66.10	64.00	32
CI 15075	CENTURK	65.90	64.45	41
PI491532	CREE	64.45	63.85	43
ID 279	BLIZZARD	63.85	62.70	45
MT 7811	FRD/WNK//MT 6928/TR	61.95	61.45	39
CI 17844	REDWIN	61.70	62.60	41
CI 13190	WARRIOR	61.60	62.75	43
CI 8885	CHEYENNE	60.90	63.20	45
PI478771	AGASSIZ	60.60	63.00	45
CI 17952	HAWK	60.35	64.05	37
ND 8002	SEWARD	58.60	61.95	44
CI 17735	NORSTAR	55.20	62.95	44
CI 13670	WINALTA	53.30	63.80	47
CI 17439	ROUGH RIDER	47.80	62.60	43
EXPERIMENTAL MEANS 2 reps		62.97	63.09	1 rep
F TEST FOR VAR.		3.10	20.76	
C.V. 1: (S/MEAN)*100		8.03	.44	
C.V. 2: (S OF MEAN/MEAN)*100		5.68	.31	
LSD (0.05)		10.58	.58	

\* Bighorn was planted on one end (not randomized)  
Rep 1 was not harvested due to variable stands. Dry fall and winter caused stand establishment problems not necessarily variety related.

Planted: 9-19-1991, 2" soil temp. 63 F.  
Harvested: 8-5-1991  
Fertilizer: 50 lbs N as anhydrous. 50 lbs 18-46-0 with seed.  
Soil Test:  
Growing season precip.: April 1 to August 1 - 10 inches  
Cooperator: D.Wichman, J.Vavrovsky, E.Hockett  
Producer: Buck Goldhahn  
Comments: W88-BZ Winter Barley winter killed.

TABLE 1991 Winter Wheat Variety Performance at Four Locations.  
Central Agricultural Research Center, Moccasin, MT. 59462

Variety	YIELD					TEST WT ave.	HEIGHT ave.
	Denton	Geraldine	Highwood	Moore	ave.		
	bu/a					lbs/bu	inches
NEELEY	63.5	73.6	74.1@@	63.7	68.7	63.2	38
VONA	65.5	68.4	67.8	68.2	67.5	64.0	33
JUDITH	61.0	73.3	63.4	55.6	63.3	62.4	37
BIGHORN	57.7*	70.1*	65.6*	57.6*	63.0*	63.0*	31*
ROCKY	60.0	66.5	67.9	57.1	62.9	63.5	39
HAWK	62.3	60.3	65.9	62.0	62.6	63.7	34
CENTURK	58.9	65.9	66.4	57.9	62.3	63.8	39
TIBER	54.7	68.3	65.8	56.1	61.2	62.7	40
WINRIDGE	59.9	66.7	57.5	56.8	60.2	62.2	42
BLIZZARD	50.8	63.8	68.1	51.1	58.4	63.0	41
MT 7811	53.8	61.9	63.0	54.6	58.3	61.7	37
WARRIOR	55.9	61.6	58.0	55.6	57.8	62.7	41
NORWIN	52.5	66.1	57.3	54.5	57.6	63.7	28
CHEYENNE	50.2	60.9	61.4	53.8	56.6	62.9	43
CREE	48.8	64.4	61.0	51.4	56.4	63.1	41
SEWARD	48.9	58.6	63.6	49.6	55.1	61.8	42
REDWIN	49.8	61.7	58.2	49.7	54.9	62.6	40
AGASSIZ	46.4	60.6	56.5	48.6	53.0	62.9	45
NORSTAR	39.3	55.2	55.4	49.3	49.8	62.0	45
WINALTA	42.7	53.3	58.9	43.7	49.6	63.0	43
ROUGH RIDER	38.7	47.8	52.8	46.4	46.3	62.4	42
OVERALL MEAN	53.17	62.97	62.14	54.28	58.3	62.88	39.24
LSD(0.05 by t)	4.55	10.58	6.50	5.54	4.5	0.81	2.76

Planted: 9-18 9-19 9-19 9-18

\* BIGHORN was not included in randomized trial, but added on to one end.  
@@ Highwood site was no-till recropped on spring wheat stubble and had a significant amount of volunteer spring wheat.

Location means were used as reps to determine overall average.

TABLE Performance of W88-BZ Winter Barley Relative to Winter Wheat at Four Off-Station Locations in Central Montana. Central Agricultural Research Center, Moccasin, Montana.

Species	Location	Planting date	Yield		
			lbs/a	bu/a*	lbs/bu
W88-BZ	Denton	9-18-90	3042	63.4	46.9
winter wheat**	Denton	9-18-90	3190	53.2	61.6
W88-BZ	Geraldine	9-19-90	0000	winter	killed
winter wheat	Geraldine	9-19-90	3778	62.7	63.1
W88-BZ	Highwood@@	9-19-90	4304	89.7	51.3
winter wheat	Highwood@@	9-19-90	3728	62.1	63.4
W88-BZ	Moore	9-18-90	3640	75.8	46.4
winter wheat	Moore	9-18-90	3257	54.3	63.4

\* 48 lb bu for barley, 60 lb bu for wheat

\*\* the average of 21 varieties used for winter wheat data.

@@ High spring wheat content, approx. 22 % of winter barley wt.

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TABLE HIGHWOOD OFF-STATION WINTER WHEAT MULTI-YEAR SUMMARY  
Central Agricultural Research Center, Moccasin, MT.

VARIETY	1988	1989	1990	1991	AVE.
	-----bu/ac-----				
CHEYENNE	18	75	62	61	54
WARRIOR	23	72	54	58	52
WINALTA	21	65	50	59	49
CENTURK	20	68	55	66	52
VONA	24	77		68	56
NORSTAR	21	74	53	55	51
REDWIN	20	73	55	58	52
NEELEY	26	83	64	74	62
ROCKY	21	75	56	68	55
WINRIDGE	19	74	59	58	53
TIBER	24	76	59	66	56
JUDITH	24	70	67	63	56
CREE	19	72	58	61	53
NORWIN	20	66	53	57	49
WESTAR		70			
MANNING		69			
HYBRITECH542		81	70		

TABLE DENTON OFF-STATION WINTER WHEAT MULTI-YEAR SUMMARY  
Central Agricultural Research Center, Moccasin MT.

VARIETY	1988	1989	1990	1991	AVE.
	-----bu/ac-----				
CHEYENNE	17	50	47	50	41
WARRIOR	24	64	45	56	47
WINALTA	15	55	40	43	38
CENTURK	24	53	48	59	46
VONA	27	50		66	48
NORSTAR	11	59	44	39	38
REDWIN	21	62	50	50	46
NEELEY	20	52	55	64	48
ROCKY	26	67	50	60	51
WINRIDGE	15	59	46	60	45
TIBER	20	59	52	55	47
JUDITH	27	64	59	61	53
CREE	23	56	47	49	44
NORWIN	15	64	47	53	45
WESTAR		40			
MANNING		57			
HYBRITECH 542		71	57		

TABLE MOORE OFF-STATION WINTER WHEAT MULTI-YEAR SUMMARY  
Central Agricultural Research Center, Moccasin, MT.

VARIETY	1986	1987	1988	1989	1990	1991	AVE.
					*		
	-----bu/ac-----						
CHEYENNE	35	66	24	45	34	54	43
WARRIOR	34	62	23	48	37	56	43
WINALTA	35	62	21	43	35	44	40
CENTURK	39	69	26	45	35	58	45
VONA	36	67	28	47		68	49
NORSTAR	32	71	9	47	35	49	40
REDWIN	31	75	19	43	37	50	42
NEELEY	39	92	17	46	34	64	49
ROCKY	35	69	24	49	29	57	44
WINRIDGE	46	86	14	54	41	57	50
TIBER	39	86	20	50	33	56	47
JUDITH	39	78	28	49	36	56	48
CREE	36	66	17	46	33	51	41
NORWIN	33	64	15	41	30	55	40
WESTAR				46			
MANNING				44			
HYBRITECH542				52	41		

\* 1990 Nursery suffered aphid damage.

TABLE GERALDINE OFF-STATION WINTER WHEAT MULTI-YEAR SUMMARY  
Central Agricultural Research Center, Moccasin, MT.

VARIETY	1986	1986	1987	1988	1989	1990	1991	AVE.
	No-Till	Fallow				*		
	-----bu/ac-----							
Cheyenne	46	46	66	26	63	40	61	50
Warrior	53	46	62	27	63	40	62	50
Winalta	46	47	66	26	64	33	53	48
Centurk	51	51	70	29	61	40	66	53
Vona	43	56	73	31	59		68	55
Norstar	58	49	68	19	64	31	55	49
Redwin	56	52	65	24	69	34	62	52
Neeley	37	47	80	21	61	44	74	52
Rocky	49	52	66	31	66	37	67	53
Winridge	64	58	84	21	49	39	67	55
Tiber	59	60	73	24	57	44	68	55
Judith	60	47	72	24	58	45	73	54
Cree	60	55	70	24	57	38	64	53
Norwin	47	49	66	24	54	45	66	50
Westar			70		48			
Manning					55			
Hybritech					66	45		

\* 1990 Nursery suffered hail damage.